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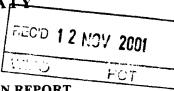
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3

09/936450

# PATENT COOPERATION TREATY

## **PCT**



### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference YWC/99357629	FOR FURTHER ACTION  See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)				
International application No.	International filing date (da		Priority Date (day/month/year)		
PCT/SG 99/00037 18 March 199		03.1999)			
International Patent Classification (IPC) or nation	onal classification and IPC		RECEIVED		
IPC <sup>7</sup> : G06F 13/00, 15/177			JAN 1 4 2002		
Applicant Kent Ridge Digital Labs et al.			Technology Center 2100		
This international preliminary exa and is transmitted to the applican			International Preliminary Examination Authority		
2. This REPORT consists of a total	of <u>3</u> sheets, in	ncluding this cove	er sheet.		
amended and are the basis	This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have bee amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rul 70.16 and Section 607 of the Administrative Instructions under the PCT).				
These annexes consist of a total of	of si	heets.			
3. This report contains indications re	lating to the following ite	ems:			
I. Basis of the opin	ion				
II. Priority					
III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability					
IV. Lack of unity of invention					
	V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicabilit citations and explanations supporting such statement				
VI. Certain documer	nts cited	·•			
VII. Certain defects i	VII. Certain defects in the international application				
VIII. Certain observat	VIII. Certain observations on the international application				
Date of submission of the demand		Date of complete	on of this report		
15 October 2000 (15	.10.2000)	18	June 2001 (18.06.2001)		
Name and mailing address of the IPEA/A	AT .	Authorized offic	er		
Austrian Patent Office Kohlmarkt 8-10			WERNER		
A-1014 Vienna		Telephone No. 1	/53424/357		
Facsimile No. 1/53424/200		L'elephone 140.	, , , , , , , , , , , , , , , , , , , ,		

Form PCT/IPEA/409 (cover sheet) (July 1998)

International application No.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

PCT/SG 99/00037

<u>I</u>	:	Basis of the report
1. \	With	regard to the elements of the international application:*
	$\boxtimes$	the international application as originally filed
		the description:
	_	pages, as originally filed
		pages, filed with the demand
		pages, filed with the letter of
		the claims:
1	_	pages as originally filed
		pages, as amended (together with any statement) under Article 19
		pages, filed with the demand
		pages, filed with the letter of
		the drawings:
	ш	pages, as originally filed
		pages, filed with the demand
		pages, filed with the letter of
	$\Box$	
	Ш	the sequence listing part of the description:
		pages, as originally filed pages, filed with the demand
		pages, filed with the letter of
2.	With	regard to the language, all the elements marked above were available or furnished to this Authority in the language in the international application was filed, unless otherwise indicated under this item.
	WIIIC Theo	the elements were available or furnished to this Authority in the following language which is:
		the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
		the language of publication of the international application (under Rule 48.3(b)).  the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/
1	<u> </u>	or 55.3).
3.	With preli	regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international iminary examination was carried out on the basis of the sequence listing:
		contained in the international application in printed form.
		filed together with the international application in computer readable form.
	Ш	furnished subsequently to this Authority in written form.
		furnished subsequently to this Authority in computer readable form.
		The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
		The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.
4.		The amendments have resulted in the cancellation of:
		the description, pages
		the claims, Nos.
	_	the drawings, sheets/fig
5.		This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**
in	this	cement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and
** A	0.17) ny re	placement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELI	MINAR	Y EXAMINATION REPORT	International application No. PCT/SG 99/00037	
citations and explanations sup	icle 35(2) porting s	) with regard to novelty, inventive st uch statement	ep or industrial applicability;	
1. Statement	C1 '			VEC
Novelty (N)	Claims	1-18		YES
	Claims			NO
	Claims			NO
Inventive step (IS)	Claims	1-18		YES
	Claims			NO
Industrial applicability (IA)	Claims	1-18		YES
Zione zini apprononioj (a v)		1-10		125
	Claims			NO
Citations and explanations (Rule 70	.7)			<u> </u>
		rch report disclose the stand		

The demand must be filed directly with the competent International Preliminary Examining Arthority or if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-lever socie of that its therity may be indirected by the applicant on the line below:

IPEN AT

CHAPTER II

### **DEMAND**

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

AUSTRIAN PATENT OFFICE		115 October 20	Examining Authority use only  15 October 2000 (15.10.00)  Date of receipt of DEMAND	
dentification of IPEA	THE INTERNATIONA	L APPLICATION	Applicant's or agent's file re	
Box No. I IDENTIFICATION OF	i - 1 filing di	ate (day/month/year)	(Earliest) Priority date (day/	month/year)
International application No.  PCT/SG 99/00037  International filing date (day/month/year)  18 March 1999 (18-03-1999)		N.A.		
Title of invention SOFTWARE DISTRIBUT	ION, EXECUTION A	ND UPGRADING		
Box No. II APPLICANT(S)			T	
Name and address: (Family name followe The address must incl	d by given name; for a legal en ude posial code and name of cou	nity, full official designation. untry.)	Telephone No.: (65) 874-7588	
KENT RIDGE DIGITAL LABS 21 Heng Mui Keng Terrace SINGAPORE 119613 REPUBLIC OF SINGAPORE			Facsimile No.: (65) 776-8109	
			Teleprinter No.:	
REPUBLIC OF SINGAP	ORE		\	
REPUBLIC OF SINGAP	ORE	State (that is COM	N.A.	
REPUBLIC OF SINGAP  State (that is, country) of nationality	: 00	1	N.A.	SG .
REPUBLIC OF SINGAP  State (that is, country) of nationality	: 00	1	N.A.	
REPUBLIC OF SINGAP	: SG wedbygivenname; for a legal e ARAN ti Avenue 5	ntity, full official designation.	N.A.  ntry) of residence:  The address must include postal code	
REPUBLIC OF SINGAP  State (that is, country) of nationality  Name and address: (Family name follo  RANGARAJAN, SRIDH  Block 379, Clemen  #02-348  SINGAPORE 120379  REPUBLIC OF SINGA	SG  med by given name; for a legal e  ARAN  ti Avenue 5  APORE	ntity, full official designation.  State (that is, co	N.A.  ntry) of residence:  The address must include postal code  ountry) of residence:	e and name of countr GG
REPUBLIC OF SINGAP  State (that is, country) of nationality  Name and address: (Family name follo  RANGARAJAN, SRIDH  Block 379, Clemen  #02-348  SINGAPORE 120379  REPUBLIC OF SINGA	SG  med by given name; for a legal e  ARAN  ti Avenue 5  APORE	ntity, full official designation.  State (that is, co	N.A.  ntry) of residence:  The address must include postal code  ountry) of residence:	e and name of countr GG
REPUBLIC OF SINGAP  State (that is, country) of nationality  Name and address: (Family name follo  RANGARAJAN, SRIDH  Block 379, Clemen  #02-348  SINGAPORE 120379  REPUBLIC OF SINGA	SG  med by given name; for a legal e  ARAN  ti Avenue 5  APORE  Ty: IN  lowed by given name; for a legal  ands Street 13	ntity, full official designation.  State (that is, co	N.A.  ntry) of residence:  The address must include postal code  ountry) of residence:	e and name of countr GG

# Sheet No. 2...

International application No. PCT/SG 99/00037

tinuation of Box No. II APP	PLICANT(S)	to the should not be included in the demand.
If none of the fol	lowing sub-boxes is use	ed, this sheet should not be included in the demand.
ne and address: (Family name followe	ed by given name; for a legal e	entity: full official designation. The address must include postal code and name of country.)
PANG, HWEE	HWA	
19 Shelford	Road	
#01-42 SINGAPORE 2	88408	
REPUBLIC OF	FSINGAPORE	
		State (that is, country) of residence:
ate (that is, country) of nationality:		State (that is, country) of testers
ate (mar is, country)	SG	The Advance must include postal code and name of country.)
lane and address: (Family name folic	owed by given name; for a legi	al entity, full official designation. The address must include postal code and name of country.)
ame and address. (1 amily many)		
•		•
	•	
		State (that is, country) of residence:
State (that is, country) of nationality	ty:	
		egal entity: full official designation. The address must include postal code and name of country.
1 Harris Frankingma fo	allowed by given name: for a le	egal entity: full official designation. The dual essential
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	ality	State (that is, country) of residence:
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State (that is country) of nations	ality: followed by given name; for a	
State (that is country) of nations	ality: followed by given name; for a	State (that is, country) of residence:  a legal entity, full official designation. The address must include postal code and name of country.
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State (that is country) of nations	ality: followed by given name; for c	a legal entity. full official designation. The address must include postal code and name of count
State (that is, country) of national Name and address: (Family name)	followed by given name; for a	
State (that is country) of nations	followed by given name; for a	a legal entity, full official designation. The address must include postal code and name of countr

Sheet No. 3

International application No. PCT/SG 99/00037

30x No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR C	ORRESPONDENCE		
common representative			
he following person is X agent Common represents the applicant(s) also for international part (x) has been appointed earlier and represents the applicant(s) common represents.	preliminary examination.		
nd X has been appointed earlier and represents the application and represents the application and represents the applications are represented to the control of the control	sentative is hereby revoked.		
had X has been appointed earlier and represents the application, is hereby appointed and any earlier appointment of (an) agent(s)/common represents the laternational Prelimination of the International Prelimination of the Internation	iminary Examining Authority, in addition to		
is hereby appointed, specifically for the procedure before the international is hereby appointed, specifically for the procedure before the international is hereby appointed appointed earlier.			
for a legal entity, full official designation	ion. Telephone No.:		
Name and address: (Family name followed by given name; for a legal transport of the address must include postal code and name of country.)	(65) 2161-609 (DID)		
HELEN YEO & PARTNERS	Facsimile No.:		
80 Raffles Place	(65) 557-2322		
#33-00 UOB Plaza l SINGAPORE 048624			
SINGRICKE GAGGE	Teleprinter No.:		
	N.A.		
Address for correspondence: Mark this check-box where no agent or comm space above is used instead to indicate a special address to which correspond	non representative is/has been appointed and the dence should be sent.		
Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION			
Statement concerning amendments:*  1. The applicant wishes the international preliminary examination to start on the bas	sis of:		
1. The applicant wishes the international premium.	!		
X the international application as originally filed			
the description as originally filed as amended under Article 34			
the claims as originally filed as amended under Article 19 (together with any accomp	panying statement)		
as amended under Article 19 (together			
as amended under Article 34			
the drawings as originally filed			
as amended under Article 34			
2. The applicant wishes any amendment to the claims under Article 19 to be	considered as reversed.		
The applicant wishes the start of the international preliminary examination from the priority date unless the International Preliminary Examining Author and United Article 19 or a notice from the applicant that he does not wish to maintenance and the start of the limit under Article 19 has not yet	thority receives a copy of any amendments made ke such amendments (Rule 69.1(d)). (This check-expired.)		
Where no check-box is marked, international preliminary examinates as originally filed or, where a copy of amendments to the claims under Article 19 under Article 34 are received by the International Preliminary Examining Author under Article 31 are liminary examination report, as so amended.			
s all annexes of international preliminary examination.	***************************************		
	nternational search.		
which is the language of a translation furnished for the purposes of a			
which is the language of publication of the international application.	noses of international preliminary examination.		
which is the language of publication of the international application.  which is the language of the translation (to be) furnished for the purpose.	POSCO 02		
The applicant hereby elects all eligible States (that is, all States which have been	n designated and which are bound by Chapter to		
excluding the following States which the applicant wishes not to elect:			
	See Noies to the demand		
2000)	_		

Sheet No. . 4

International application No. PCT/SG 99/00037

		1111	For Internation	nal Preliminary thority use only
he demand is accompanied by the following elements	ents, in the language re	ferred to in	received	not received
he demand is accompanied by the following elem- lox No. IV, for the purposes of international preli	minary examination	1	received	
	:	sheets	لـا	
translation of international application		sheets		
2. amendments under Article 34	•		• <del>-</del>	
<ol> <li>copy (or, where required, translation) of amendments under Article 19</li> </ol>	:	sheets		
4. copy (or, where required, translation) of	. :	sheets		
statement under Article 19	. 1 (one	sheets		
5. letter	`			
6. other (specify)	:	sheets		
he demand is also accompanied by the item(s) π	narked below:	ctatement	explaining lack of si	gnature
1. X fee calculation sheet	4.	Statement	le and or amino acid s	equence listing in
Signed nower of attorney	5.	nucleotic	r readable form	•
	,	other (sp		
3. copy of general power of attorney; reference number, if any:  Box No. VII SIGNATURE OF APPLICANT	6.			
				vious from reading the demand).
YEW WOON CHOOI Agent for the a HELEN YEO & PAR	(Ms) pplicants			
YEW WOON CHOOI Agent for the a HELEN YEO & PAR	(Ms) pplicants TNERS			
YEW WOON CHOOI Agent for the a HELEN YEO & PAR	(Ms) pplicants TNERS  mational Preliminary E	xamining Autho	ority use only	
YEW WOON CHOOI Agent for the a HELEN YEO & PAR	(Ms) pplicants TNERS	xamining Autho	ority use only	
YEW WOON CHOOI Agent for the a HELEN YEO & PAR  For Inter  1. Date of actual receipt of DEMAND:  2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b)	(Ms) pplicants TNERS  mational Preliminary E  15 October 20	xamining Autho	ority use only	pplicant has been
YEW WOON CHOOI Agent for the a HELEN YEO & PAR  For Inter  1. Date of actual receipt of DEMAND:  2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b)	(Ms) pplicants TNERS  national Preliminary E  15 October 20	xamining Authority (15.10	ority use only .00)  The a inform	pplicant has been ned accordingly.
YEW WOON CHOOI Agent for the athelen YEO & PAR  For Inter  1. Date of actual receipt of DEMAND:  2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b)  3. The date of receipt of the demand from the priority date and item 4	(Ms) pplicants TNERS  national Preliminary E  15 October 20  iii iiiiiiiiiiiiiiiiiiiiiiiiiiiiiii	xamining Authorion of 19 month apply.	ority use only  .00)  The a informaths from the priority	pplicant has been ned accordingly. date as extended by virtue
YEW WOON CHOOI Agent for the are HELEN YEO & PAR  For Inter  1. Date of actual receipt of DEMAND:  2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b).  3. The date of receipt of the demand from the priority date and item of the date of receipt of the demand from the priority date and item of the date of receipt of the demand from the priority date and item of the date of receipt of the demander.	(Ms) pplicants TNERS  mational Preliminary E  15 October 20  iii): d is AFTER the expirat 4 or 5, below, does not and is WITHIN the pe  the demand is after the 82.	ion of 19 month apply.	The a informaths from the priority	pplicant has been ned accordingly. date as extended by virtue
YEW WOON CHOOI Agent for the athelen YEO & PAR  For Inter  1. Date of actual receipt of DEMAND:  2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b)  3. The date of receipt of the demanfrom the priority date and item 4.  4. The date of receipt of the demandation and the Rule 80.5.	(Ms) pplicants TNERS  mational Preliminary E  15 October 20  iii): dis AFTER the expirat 4 or 5, below, does not and is WITHIN the pe	ion of 19 month apply.	The a informaths from the priority	pplicant has been ned accordingly. date as extended by virtue

CHAPTER II

# **PCT**

# FEE CALCULATION SHEET

# Annex to the Demand for international preliminary examination

	For International Preliminary Examining Authority use only
ternational PCT/SG 99/00037	
pplicant's or agent's YWC/99357629 le reference	Date stamp of the IPEA
pplicant  KEN RIDGE DIGITAL LABS and 3 other	s
Calculation of prescribed fees	
1. Preliminary examination fee	2,200 P
2. Handling fee (Applicants from certain States are entitled to a reduction of 75% of the handling fee. Where the applicant is (or all applicants are) so entitled, the amount to be entered at H is 25% of the handling fee.)	2,022.76 H
3. Total of prescribed fees Add the amounts entered at P and H and enter total in the TOTAL box	4,222.76 TOTAL
Mode of Payment	
authorization to charge deposit cash account with the IPEA (see below) reve	enue stamps
postal money order cou	ner (specify): transfer to postal check
	Oesterreichische postsperkentet In vienna (NO. 05160.000)
	rge the total fees indicated above to my deposit account.  The deficiency of credit any overpayment in the total fees indicated above to deficiency or credit any overpayment in the total fees indicated above to
Deposit Account Number Date (day/month/ye	ear) Signature See Notes to the fee calculation s

- ,* -		
	PATENT COOPE	RATION TREATY
From the INTERNATIONAL S	EARCHING AUTHORITY	

From the INTERNATIONAL SEARCHING AUTHORITY	
То:	PCT
HELEN YEO & PARTNERS 11 Collyer Quay #12-01 The Arcade SINGAPORE 049317	NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION
REPUBLIC OF SINGAPORE	(PCT Rule 44.1)
	Date of mailing (day/month/year) 23 August 2000 (23.08.00)
Applicant's or agent's file reference	FOR FURTHER ACTION See paragraphs 1 and 4 below
YWC/99357629 · International application No.	International filing date (day/month/year)
•	18 March 1999 (18.03.99)
PCT/SG 99/00037	18 Water 1999 (16.65.99)
Applicant KENT RIDGE DIGITAL LABS et al.	
Filing of amendments and statements under Article 19. The applicant is entitled, if he so wishes, gto amend the c  When? The time limit for filing such amendements search report; however, for more details, see Where? Directly to the International Bureau of WII 34, chemin des Colombettes 1211 Geneva 20, Switzerlan Facsimile No.: (41-22) 740.  For more detailed instructions, see the notes on the acceptance of the service of	elaims of the international application (see Rule 46): is normally two months from the date of transmittal of the international e the notes on the accompanying sheet.  PO s and 0.14.35
that effect is transmitted herewith.	rch will be established and that the declaration under Article 17(2)(a) to
4. Further action(s): The applicant is reminded of the follo	
applicant wishes to avoid or postpone publication, a claim, must reach the International Bureau as provide the technical preparations for international publications.	onal application will be published by the International Bureau. If the notice of withdrawal of the international application, or of the priority ded in Rules 90bis. 1 and 90bis.3, respectively, before the completion of ion.
postpone the entry into the national phase until 30 h	rnational preliminary examination must be filed if the applicant whishes to nonths from the priority date (in some Offices even later).
Within 20 month from the priority date, the applicant must designated Offices which have not been elected in t	perform the prescribed acts for entry into the national phase before all the demand or in a later election within 19 months from the priority date or Chapter II.

Name and mailing address of the IPEA/AT	Authorized officer
Austrian Patent Office Kohlmarkt 8-10	Koch
A-1014 Vienna Facsimile No. 1/53424/200	Telephone No. +43 / 1 / 53424 - 450

could not be elected because they are not bound by Chapter II.





## **PCT**

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	200 0000	State dia em la tu	1 of lutaractional Sparch Donor		
YWC/99357629	FOR FURTHER see Notification of Transmittal of International Search Report ACTION (Form PCT/ISA/220) as well as, where applicable, item 5 below.  (Factions) Priority Date (day/month/year)				
International application No.			(Earliest) Priority Date (day/month/year)		
PCT/SG 99/00037	37   18 March 1999 (18.03.1999)				
Applicant					
KENT RIDGE DIGITAL LA	ABS et al.				
This international search report has be	en prepared by this Inter-	national Searching Author	rity and is transmitted to the applicant		
according to Article 18. A copy is beir	ng transmitted to the Inte	mational Bureau.			
This international search report consis	ts of a total of 3	sheets.			
It is also accompan	nied by a copy of each pri	or art document cited in t	his report.		
Basis of the report     a. With regard to the language language in which it was file.	e, the international search led, unless otherwise ind	was carried out on the ba	asis of the international application in the		
Authority (Rule 23.1(b	))).		e international application furnished to this		
b. With regard to any nucleoti search was carried out on th	de and/or amino acid so the basis of the sequence l	equence disclosed in the isting:	international application, the international		
contained in the interna	contained in the international application in written form.				
filed together with the	filed together with the international application in computer readable form.				
	to this Authority in writ	•			
furnished subsequently	furnished subsequently to this Authority in computer readable form.				
the statement that the sinternational application as	subsequently furnished w filed has been furnished.	ritten sequence listing do	es not go beyond the disclosure in the		
the statement that the i	information recorded in o	computer readable form is	identical to the written sequence listing has		
2. Certain claims were	found unsearchable (Se	e Box I).			
3. Unity of invention is	lacking (See Box 11).		·		
4. With regard to the title,					
the text is approved as	s submitted by the applic	ant.			
the text has been estab	olished by this Authority	to read as follows:			
5. With regard to the abstract,		ant			
the text is approved as			ity as it appears in Box III. The applicant may.		
within one month fro	in the date of mailing of	this international search r	ity as it appears in Box III. The applicant may, eport, submit comments to this Authority.		
6. The figure of the drawings to b	pe published with the abs	tract is Figure No.: 3			
as suggested by the a	pplicant.		None of the figures.		
because the applicant	failed to suggest a figur	e			
because this figure be	etter characterizes the inv	vention.			



### INTERNATIONAL SEARCH REPORT

International application No. PCT/SG 99/00037

CLA	ASSIFICATION OF SUBJECT MATTER		
$IPC^7: G$	3 06 F 13/00, 15/177		
According	g to International Patent Classification (IPC) or to both nation	nal classification and IPC	
B EIE	LDS SEARCHED documentation searched (classification system followed by		
_		<u> </u>	
Documen	G 06 F; H 04 L; H 04 Q  Itation searched other than minimum documentation to the ex	xtent that such documents are included i	n the fields searched
Electroni	c data base consulted during the international search (name c	of data base and, where practicable, sear	ch terms used)
WPI, P	AJ		
C. DO	CUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate,	of the relevant passages	Relevant to claim No.
A	US 5421009 A (HEWLETT-PACKARD) 30 May 1995 (30.05.95) 1-6,13-18 abstract		
Α	WO 96/24231 A1 (ERICCSON) 8 August 1996 (08.08.96)  1-18 totality.		
A	US 5845077 A1 (MICROSOFT) 1 December 1998 (01.12.98) 1-6,13-18 abstract.		
A	US 5881236 A (HEWLETT-PACKARD) 9 March 1999 (09.03.99) 1-6 abstract.		
A	JP 10-269078 A (TOSHIBA K.K.) 9 Octobabstract.	ber 1998 (09.10.98)	1-6
	urther documents are listed in the continuation of Box C.	See patent family annex.	_
* Sper "A" doc cons "E" earlifilm "L" doc cite sper "O" doc	cial categories of cited documents: ument defining the general state of the art which is not sidered to be of particular relevance ier application or patent but published on or after the international ng date ument which may throw doubts on priority claim(s) or which is d to establish the publication date of another citation or other cial reason (as specified) cument referring to an oral disclosure, use, exhibition or other	"T" later document published after the intern date and not in conflict with the applicathe principle or theory underlying the ir "X" document of particular relevance; the considered novel or cannot be considered when the document is taken alone "Y" document of particular relevance; the considered to involve an inventive step combined with one or more other such being obvious to a person skilled in the "&" document member of the same patent."	tion but cited to understand ivention laimed invention cannot be ed to involve an inventive step laimed invention cannot be when the document is documents, such combination e art
the	priority date claimed f the actual completion of the international search	Date of mailing of the international se	arch report
Date of	23 August 2000 (23.08.2000)	23 August 2000 (2	
Nome	and mailing adress of the ISA/AT	Authorized officer	
Austi	rian Patent Office	Werner	
Kohl	markt 8-10; A-1014 Vienna	1/52/12//257	
	nile No. 1/53424/535	Telephone No. 1/53424/357	



### INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No. PCT/SG 99/00037

Patent document cited in search report			Publication date	. F	atent fa membe	amily er(s)	Publication date
JP	A2	10269078	09-10-1998			none	
US	A	5421009	30-05-1995			none	
		5845077	01-12-1998	บร	Α	6073214	06-06-2000
<u>us</u>	_ <u>A</u>	5881236	09-03-1999	DE	A1	19714521	06-11-1997
US	A	5881236	09-03-1555	JР	A2	10091454	10-04-1998
		0.604021	08-08-1996	AU	A1	46379/96	21-08-1996
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				CA	AA	2211733	08-08-1996
				EP	A1	807363	19-11-1997
				FI	0.A	973143	29-07-1997
				FI	A	973143	29-09-1997
				JP	T2	11501136	26-01-1999



### PATENT COOPERATION TREATY

#### From the INTERNATIONAL BUREAU

**HELEN YEO & PARTNERS** 80 Raffles Place #33-00 UOB Plaza 1 Singapore 048624 **SINGAPOUR** 

**PCT** 

Helenyeo INFORMATION CONCERNING ELECTED OFFICES NOTIFIED OF THEIR ELECTION

(PCT Fule 61.3)

Date of mailing (day/month/year)

15 December 2000 (15.12.00)

Applicant's or agent's file reference

YMC/99357629

IMPORTANT INFORMATION

International application No. PCT/SG99/00037

International filing date (day/month/year)

18 March 1999 (18.03.99)

Priority date (day/month/year)

**Applicant** 

KENT RIDGE DIGITAL LABS et al

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

EP:AT,BE,CH,CY,DE,DK,ES,FI,FR,GB,GR,IE,IT,LU,MC,NL,PT,SE

National :JP,US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

National:SG

3. The applicant is reminded that he must enter the "national phase" before the expiration of 30 months from the priority date before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

The entry into the European regional phase is postponed until 31 months from the priority date for all States designated for the purposes of obtaining a European patent.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland

Authorized officer:

Juan Cruz

Facsimile No. (41-22) 740.14.35

Telephone No. (41-22) 338.83.38

### PATENT COOPERATION TREATY

To:

From the INTERNATIONAL BUREAU	From	the	INTER	RNATION	IAL BU	REAL
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### **PCT**

#### **NOTIFICATION OF ELECTION**

(PCT Rule 61.2)

Commissioner
US Department of Commerce
United States Patent and Trademark
Office PCT

2011 South Clark Place Room CP2/5C24

Arlington, VA 22202 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)				
15 December 2000 (15.12.00)				

International application No. PCT/SG99/00037

International filing date (day/month/year)
18 March 1999 (18.03.99)

Applicant's or agent's file reference YMC/99357629

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Priority date (day/month/year)

#### Applicant

RANGARAJAN, Sridharan et al

1.	The designated Office is hereby notified of its election made:
	X in the demand filed with the International Preliminary Examining Authority on:
	15 October 2000 (15.10.00)
	in a notice effecting later election filed with the International Bureau on:
2.	The election X was
	was not
	made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Authorized officer

Juan Cruz

Telephone No.: (41-22) 338.83.38

Facsimile No.: (41-22) 740.14.35

# **PCT**

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	Applicant's or agent's file reference				
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Box No. I TITLE OF INVENTION					
SOFTWARE DISTRIBUTION, EXEC	CUTION AND UPGRADING				
Box No. II APPLICANT					
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Name and address: (Family name followed by given name; for designation. The address must include postal code and name of co	untry. The country of the This person is also inventor.				
address indicated in this Box is the applicant s State (that is, countr	y) of residence if no State				
of residence is indicated below.)	Telephone No.				
	(65) 874 7588				
KENT RIDGE DIGITAL LABS	Facsimile No.				
21 Heng Mui Keng Terrace	(65) 776 8109				
SINGAPORE 119613	Teleprinter No.				
REPUBLIC OF SINGAPORE	N.A.				
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State (that is, country) of nationality:  SG	Scale (that is, country) of residence.				
This person is applicant for the purposes of:  all designated all designated the United	ted States except the United States the States indicated in States of America of America only the Supplemental Box				
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Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)					
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designation. The address must include postal code and name of co address indicated in this Box is the applicant's State (that is, count	nuntry. The country of the This person is:				
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DANICA DA TARE COTOUADAR	L.J				
RANGARAJAN, SRIDHARAN	applicant and inventor				
Block 379, Clementi Avenu	· ·				
#02-348	inventor only (If this check-box				
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X Further applicants and/or (further) inventors are indicated	i on a continuation sheet.				
Box No. IV AGENT OR COMMON REPRESENTATIV					
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FEE CALCULATION SHEET  Annex to the Request	International application No.		
Applicant's or agent's file reference YWC/99357629	Date stamp of the receiving Office		
Applicant KENT RIDGE DIGITAL LABS			
CALCULATION OF PRESCRIBED FEES  1. TRANSMITTAL FEE  2. SEARCH FEE  International search to be carried out by  (If two or more International Searching Authorities are competent in relating application, indicate the name of the Authority which is chosen to carry out the international searching application.	on to the international international search.		
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Patents Rules

[1996 Ed. p. 129

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**PATENTS FORM 48** 

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I/We KENT RIDGE DIGITAL	13
21 Heng Mui Keng Ter	race
SINGAPORE 119613	
REPUBLIC OF SINGAPOR	E
the applicant(s) in respect of an international under the Patent Co-operation Treaty, havin transmit the transmittal fee payable in accordance the Patent Co-operation Treaty in res	dance with rule 14(1) of the Regulations
Signature(s)	. Date 18 March 19.99
(See note 2)	YEO & PARTNERS
Name of Agent (if any)HELEN	
Address for service in Singapore to which all communications should be sent	11 Collyer Quay #12-01 The Arcade, SINGAPORE 049317
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# PATENT COOPERATION TREATY

n the ERNATIONAL PRELIMINARY EX	(AMINATION AUTHORITY	Y	PCT			
: ELEN YEO & PARTNERS I Collyer Quay 12-01 The Arcade INGAPORE 049317 EPUBLIC OF SINGAPORI		NOTIFICATION OF RECEIPT OF DEMAND BY COMPETENT INTERNATIONAL EXAMINING AUTHORITY  (PCT Rules 59.3(e) and 61.1(b), first sentence and Administrative Instructions, Section 601(a))				
		Date of mailing (day/month/year)	3 November 2000 (03.11.00)			
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WC/99357629	International filing date (day/mo	onth/year)	Priority Date (day/month/year)			
nternational application No. PCT/SG 99/00037	18 March 1999 (18.0					
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#### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

### CORRECTED VERSION

#### (19) World Intellectual Property Organization International Bureau





#### (43) International Publication Date 21 September 2000 (21.09.2000)

#### PCT

### (10) International Publication Number WO 00/55740 A1

(51) International Patent Classification7: 15/177

G06F 13/00,

- (74) Agent: HELEN YEO & PARTNERS; 80 Raffles Place,
- (21) International Application Number: PCT/SG99/00037
- (22) International Filing Date: 18 March 1999 (18.03.1999)
- (25) Filing Language:

English

(26) Publication Language:

English

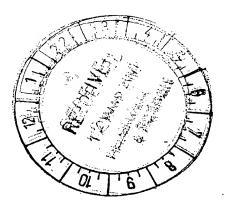
- (71) Applicant (for all designated States except US): KENT RIDGE DIGITAL LABS [SG/SG]; 21 Heng Mui Keng Terrace, Singapore 119613 (SG).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): RANGARAJAN, Sridharan [IN/SG]; Block 379, Clementi Avenue 5, #02-348, Singapore 120379 (SG). LIN, Feng [CN/SG]; Block 110, Woodlands Street 13, #12-20, Singapore 730110 (SG). PANG, Hwee, Hwa [SG/SG]; 19 Shelford Road, #01-42, Singapore 288408 (SG).

- #33-00 UOB Plaza 1, Singapore 048624 (SG).
- (81) Designated States (national): JP, SG, US.
- (84) Designated States (regional): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

#### Published:

- With international search report.
- (48) Date of publication of this corrected version:
  - 1 March 2001
- (15) Information about Correction: see PCT Gazette No. 09/2001 of 1 March 2001, Section II

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



#### (54) Title: SOFTWARE DISTRIBUTION, EXECUTION AND UPGRADING

(57) Abstract: A method of distributing software over a communication network includes the steps of: making the software available on a file server attached to the network; providing and executing an installation application on a user's computer attached to the network; monitoring file requests made by the installation application; identifying file requests which relate to files which are not present on the user's computer; downloading the identified files from the file server; storing the downloaded files in storage media on the user's computer; and directing the file requests for the identified files, and any future file requests for those files, to the downloaded versions of those files. Similar methods are provided for executing software over a network and upgrading software over a network.

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English

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#### WORLD INTELLECTUAL PROPERTY ORGANIZATION International Bureau



#### INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7:

(11) International Publication Number:

WO 00/55740

G06F 13/00, 15/177

(43) International Publication Date: 21 September 2000 (21.09.00)

(21) International Application Number:

PCT/SG99/00037

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(22) International Filing Date:

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Singapore 119613 (SG).

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(81) Designated States: JP, SG, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

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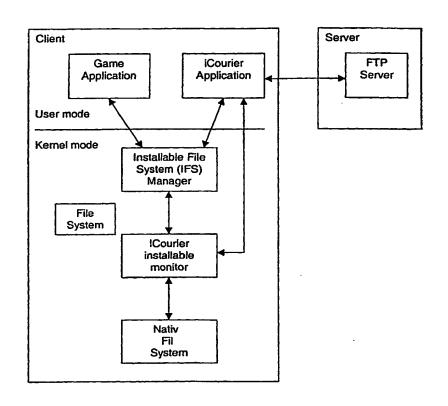
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#### (54) Title: SOFTWARE DISTRIBUTION, EXECUTION AND UPGRADING

#### (57) Abstract

A method of distributing software over a communication network includes the steps of: making the software available on a file server attached to the network; providing and executing an installation application on a user's computer attached to the network; monitoring file requests made by the installation application; identifying file requests which relate to files which are not present on the user's computer, downloading the identified files from the file server; storing the downloaded files in storage media on the user's computer; and directing the file requests for the identified files, and any future file requests for those files, to the downloaded versions of those files. Similar methods are provided for executing software over a network and upgrading software over a network.



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#### SOFTWARE DISTRIBUTION, EXECUTION AND UPGRADING

This invention relates to methods for distribution, execution and upgrading of software. It relates particularly but not exclusively to methods for executing and distributing software over a communication network such as a local area network, a wide area network, a virtual private network, or the Internet.

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Most current application software consists of a large number of different files. Such software is typically distributed on one or more CD-ROMs. The software is installed on a user's computer by running a set-up or installation program, which writes different files to different directories or folders on storage media (such as a hard disk) on the user's computer. When the software application is executed, it makes file requests to the various different files as they are needed. The file requests are typically made to a particular file directory location on the user's computer, and the software may cease to operate properly if a file is not found in the expected location. For some software, the file requests are made to a CD-ROM drive on the user's computer, and the software may cease to operate properly if the correct CD-ROM is not present in the drive.

Disadvantages of software distribution using CD-ROMs or other physical distribution media include the costs of creating the CD-ROMs, the effort and expense involved in creating printed manuals and packaging, and the time delays and transportation logistics involved in physically delivering the media to the user. Different users have different configurations of computers and different requirements for software functionality. Accordingly, different users require slightly different (sometimes significantly different) versions of the same software, and in order to achieve this the software manufacturer typically includes all possible variations on the distribution media, with the user selecting the applicable components during installation. From the user's point of view, there is the inconvenience of receiving more materials than may be required. Typically, a user never finds a use for all of the software which is received, and the functionality of the software far exceeds what is required. After a while, superseded CD-ROMs take up useful space. The user may have to pay for and install the whole of a software package when all that was required was a small part of it, and the user may have preferred to pay a lesser amount for software which takes up less data storage space on the user's computer. Moreover, a user who uses the software

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only occasionally has to pay the same amount as a person who uses the software frequently.

It is becoming increasingly common to distribute software over the Internet. This is typically done by collecting all the files for a software application together into a compressed archive, making the archive available on an FTP or Web server on the Internet, and downloading the archive from the FTP or Web server onto the user's computer. The user then runs an installation program which decompresses the archive to extract the files, and then writes different files to different directories on the hard disk of the user's computer in much the same way as the installation program on a CD-ROM operates.

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Apart from the issues of wastage and delivery of physical media, this method of delivery of software includes many of the disadvantages of conventional physical delivery. It is still usually necessary for the user to download more files than are actually required for the user's particular configuration, and this can be problematic in view of the time costs typically associated with connecting to the Internet. There is no means for charging the user only for the parts of the software which are actually useful to the user, or for charging the user on the basis of the frequency with which the software is used. Moreover, once a complete archive of the relevant software has been downloaded by the user, it is relatively easy for the user to make and distribute unauthorised copies, so piracy issues arise.

A further problem associated with conventional software distribution methods relates to the manner in which the user decides whether the software is suitable for the user's purposes. It is typically very difficult for a user to decide whether software is suitable merely from reading advertising material, and the suitability can in many cases only be verified some time after the user has purchased the software and gone through the effort necessary to learn how to use it. This can result in a user purchasing unsuitable software. One answer to this problem is provided by cut-down "demonstration" versions of the software which may be distributed at low cost or free of charge via physical media (such as on CD-ROMs sold with computer magazines) or over the Internet. However, because it is usually necessary for a user to invest a significant amount of time in installation and learning how to use a new software application, there is often a reluctance to spend the time necessary to install and learn how to use a cut-down software product which will never in itself be useful.

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Another type of software distribution is involved in client-server networking, typically in the context of local area networks. A typical local area network involves a number of client computers connected to one or more file servers. Networking software located on a client computer and the file server enables the client computer to gain access to files on the file server as if the files were located on a disk drive on the client computer. From the client computer's point of view, the file server simply appears to be one or more additional file volumes on the client computer. As a result, it is possible to run client-server software applications, in which some of the files are located on the client computer and some are located on the file server. In peer-to-peer networking, a similar result is achieved in a system where each computer can be configured to allow the other computers in the network to have access to part or all of its disk volumes.

An advantage of client-server networking and peer-to-peer networking is that it is not necessary for each computer in the network to have a complete copy of all the files of the software application; shared files need only be present on one computer. Accordingly, computer storage media space is not wasted, and upgrading can be a simpler process. However, this type of networking can typically only be achieved within an organisation which has the same networking software on all computers. Efficiencies can be gained in distributing software within an organisation, but not between organisations or to individuals which are not part of the organisation.

US Patent 5,752,005 describes a foreign file system establishing method which uses a native file system virtual device driver. A computer has a native file system which provides various native function routines. A virtual driver communicates with the native file system and intercepts some of the function routines, transferring them to a particular location on another ("foreign") computer. This allows the computer to gain some of the advantages of client-server networking, but it is necessary for the device driver to emulate the foreign file system.

An object of the present invention is to provide new methods of distributing, executing and upgrading software which overcome some or all of the difficulties described above.

According to a first aspect of the invention, there is provided a method of distributing software over a communication network including the steps of:

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- (a) making the software available on a file server attached to the network;
- (b) providing and executing an installation application on a user's computer attached to the network;
- (c) monitoring file requests made by the installation application;
- 5 (d) identifying file requests which relate to files which are not present on the user's computer;
  - (e) downloading the identified files from the file server;
  - (f) storing the downloaded files in storage media on the user's computer; and
  - (g) directing the file requests for the identified files, and any future file requests for those files, to the downloaded versions of those files.

The communication network may be any suitable form of communication network. Suitable communication networks include the Internet, a local area network, a wide area network, and a virtual private network. It is currently envisaged that the invention will be used most extensively in the context of distribution of software over the Internet. It will be seen that one of the advantages of this aspect of the invention is that a user downloads only the files which are required by the user.

The file server may be any suitable type of file server. Suitable types of file servers, with particular reference to Internet applications, include an FTP server, and HTTP server and a Gopher server.

The method of this aspect of the invention may further include the steps of:

- (h) monitoring the number of times that files are requested and/or the particular files requested by the user's computer from the server; and
- (i) requiring the owner of the user's computer to make payments based on the number of times that files are requested and/or the particular files requested.

These steps enable the software manufacturer to charge a differential price to users based on the amount of the software which the user actually uses and/or on the frequency of use. Accordingly, a person who uses only a small part of the software or who uses it only occasionally can be charged a smaller fee, whereas a person who uses more extensive parts of the software or uses it frequently can be charged a higher fee.

During the installation process, the software may optionally require that a key be entered.

One of the advantages of the first aspect of the invention is that it can allow distribution of currently available software without any modification of the file requests made by that software. This is because file requests are intercepted. If the file is already on the user's computer, the file request is directed to that file. If the file is not on the user's computer, the file is downloaded from the file server and then accessed on the user's computer. Currently available software might make numerous file requests to the local CD-ROM drive, because the software has been programmed with the assumption that the software is being installed from a local CD-ROM. All of these requests are monitored and converted into file download requests directed to the file server or redirected to downloaded files located on the user's computer.

According to a second aspect of the invention, there is provided a method of executing computer application software on a user's computer which is connected to a communication network including the steps of:

- 15 (a) providing on the user's computer a version of the software which does not include all the files necessary for complete operation of the software;
  - (b) making the missing files available on a file server attached to the network;
  - (c) executing the software on the user's computer;

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- (d) monitoring file requests made by the software;
- 20 (e) identifying file requests which relate to files which are not present on the user's computer;
  - (f) downloading the identified files from the file server and storing them in volatile or non-volatile storage media on the user's computer;
  - (g) directing the file requests for the identified files to the downloaded versions of those files; and
    - (h) deleting one or more of the downloaded files from the user's computer.

The communication network and the file server may have the same features as described above in relation to the first aspect of the invention.

The step of deleting one or more of the downloaded files may be done at any suitable time, including:

- (i) as the files are closed by the software;
- (ii) when execution of the software terminates;
- (iii) after a pre-determined time or number of days has elapsed; and/or
- (iii) after the software has been executed a pre-determined number of times.

The method of this aspect of the invention may further include the steps of:

- (i) monitoring the number of times that files are requested and/or the particular files requested by the user's computer from the server; and
- (j) requiring the owner of the user's computer to make payments based on the number of times that files are requested and/or the particular files requested.

It will be seen that this method requires the user's computer to make contact with the file server at regular intervals in order to replace deleted files, and this facilitates the pay-per-use type of charging. This method is also useful for overcoming the purchasing barrier — allowing users to try the actual software first before buying it. There is no need for the software to be a cut-down version.

According to a third aspect of the invention, there is provided a method of automatically upgrading software on a user's computer over a communication network including the steps of:

- (a) making the upgrade software available on a file server attached to the network;
- (b) ascertaining that the software on the user's computer is an older version than the upgrade software;
- (c) executing the software on the user's computer and monitoring file requests made by the software;
- 20 (d) identifying file requests which relate to files which have been upgraded in the upgrade software;
  - (e) downloading the identified files from the file server;

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- (f) storing the downloaded files in storage media on the user's computer; and
- (g) directing the file requests for the identified files, and any future file requestsfor those files, to the downloaded versions of those files.

The communication network and the file server may have the same features as described above in relation to the first aspect of the invention.

The step of ascertaining that the software on the user's computer is an older version than the upgrade software may occur at any suitable time, including:

- (i) each time the software on the user's computer is executed;
  - (ii) after the software on the user's computer has been executed a predetermined number of times; or
  - (iii) after a predetermined period of time.

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When it is ascertained that the software on the user's computer is an older version than the upgrade software, an upgrade agent may be downloaded from the file server to the user's computer. The upgrade agent performs the function of monitoring file requests made by the software to identify file requests which relate to files which have been upgraded in the upgrade software.

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The invention will hereinafter be described in greater detail by reference to the attached drawings which show an example form of the invention. It is to be understood that the particularity of those drawings does not supersede the generality of the preceding description of the invention.

Figure 1 is a block diagram showing schematically the software components in a conventional networking system.

Figure 2 is a block diagram showing schematically the software components in a networking system according to the present invention.

Figure 3 is a schematic diagram of the components in a preferred embodiment of the present invention.

Referring firstly to Figure 1, there is shown the components in conventional directory mounting/mapping products such as NFS, SMB and NetWare. On the host machine, application software runs on top of an operating system. The application software communicates with the operating system through various application program interfaces (APIs). Included within the operating system are a native file system, which includes a multiplicity of function routines, and network drivers. On the remote computer, the operating system also includes a file system and network drivers. When the application software on the host machine accesses a file on the remote machine, it does so by making a request to the file system on the host machine. This request then passes to the network driver on the host machine, which passes the request to the network driver on the remote machine, which in turn passes it to the file system on the remote machine to access the file. The response is sent back through the same communication chain. There is no trapping of file requests made from the application software before they reach the native file system. Instead, the native file system invokes special drivers called network redirectors, which co-operate with their counterparts on the remote machine to make the directories and files visible to the native file system.

Referring now to Figure 2, the present invention enables software to be installed and run on a host machine, without requiring the underlying files to be

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physically available on any of the local storage drives. Instead, every file request from the software is trapped by an installable monitor, which dynamically downloads the target file from a remote file server to a local storage medium if the file has not already been downloaded. The installable monitor thereafter directs the native file system to operate on the downloaded file in order to satisfy the file request. Even requests for a file at an absolute path on a specific drive (e.g. the CD-ROM drive) are redirected to the downloaded file, which is likely to reside at a different path on a different drive. The downloaded file can optionally be removed when the software closes the file, or when the software terminates. Consequently, a host machine can run application software without having a physical medium containing all the underlying files.

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In a preferred embodiment as illustrated in Figure 3, the file server is a standard FTP server using the FTP communication protocol. The communication network is the Internet. The user's computer has Windows 95 as its operating system, and the FTP server has Solaris as its operating system. However, those skilled in the art should appreciate that different operating systems have similar features and functions, so that the present invention is not limited to use only in connection with these operating systems.

The installable monitor on the user's computer has two components: a virtual device driver (VxD) inside the operating system kernel, and a Windows application at the user level, which includes an FTP client (the user mode application). The VxD is implemented in such a way that it layers itself on top of the native file system. It is implemented as a hook that gets installed below the installable file system (IFS) manager interface. A hook is a programming device that alters program flow away from its original intent. Consequently, for selected program flow threads progressing through the IFS manager interface, program flow is routed to the VxD rather than to the native file system as originally intended. The VxD is then free to either satisfy the request and return program flow back to the requesting thread or modify the request before directing it to the native file system.

The native file system may include function routines directed towards file rights, file locking, file transaction tracking and the like. These are of little importance to the installable monitor of the invention, and hence hooks are omitted

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for such functions. The selected functions for which hooks are implemented in the preferred embodiment are indicated in the following table:

CreateFile	WriteFile	FindNextFile
CloseFile	GetFileSize	GetFileAttributes
ReadFile	FindFirstFile	GetFileTime
CreateDirectory	DeleteFile	

The precise processes and program flow used in hooking these function routines are unimportant for the purposes of the present invention. Such hooking may be implemented any number of different ways, as will be known to those skilled in the art. For example, published information describing the operating system may indicate the definition of the IFS manager interface for various function routines supported by the native file system. To the extent that published information is lacking, hook locations may be determined empirically.

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For each function routine that is hooked, the VxD blocks the execution of the request inside the kernel, determines the path name of the request issued by the CD application and translates it into the equivalent remote path name on the CD drive attached to the file server. This remote path name is then passed back to the user mode application using known event notification mechanisms. The user mode application then translates the request into an FTP request and forwards it to the FTP server. The user mode application waits for a response from the FTP server and, once the file has been downloaded onto the user's machine, it sayes the file to another location on the user's machine's local storage media. Confirmation of the download is passed to the VxD, together with the location of the local copy of the file. The VxD then redirects the native file system to satisfy the request made by the application using the local copy, and the application continues as normal. The application itself is unaware that its files and data are being accessed on-line rather than on a local CD-ROM. After the application finishes execution, or closes the file, or after a pre-determined number of uses or after a pre-determined number of days, (these options may be configurable) one or more or all of the downloaded files are deleted from the user's machine.

Typical applications for this embodiment include games traditionally distributed via CD-ROM disks. The start-up program corresponds to the game

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application that is launched on the user's machine. Typically these applications store their data in the form of movie files on the CD-ROM disk. These are downloaded on demand by the installable monitor on the user's computer, while the user continues to play the game.

It is to be understood that various alterations, modifications and additions can be made to the parts previously described without departing from the ambit of the invention.

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#### Claims:

1. A method of distributing software over a communication network including the steps of:

- 5 (a) making the software available on a file server attached to the network;
  - (b) providing and executing an installation application on a user's computer attached to the network;
  - (c) monitoring file requests made by the installation application;
- (d) identifying file requests which relate to files which are not present on the user's computer;
  - (e) downloading the identified files from the file server;
  - (f) storing the downloaded files in storage media on the user's computer; and
  - (g) directing the file requests for the identified files, and any future file requests for those files, to the downloaded versions of those files.

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- 2. A method according to claim 1 further including the steps of:
- (h) monitoring the number of times that files are requested and/or the particular files requested by the user's computer from the server; and
- (i) requiring the owner of the user's computer to make payments based on the number of times that files are requested and/or the particular files requested.
  - 3. A method according to claim 1 wherein the software requires a key to be entered during installation.
- A method according to claim 1 wherein the communication network is the Internet.
  - 5. A method according to claim 1 wherein the communication network is a local area network or a private wide area network.

- 6. A method according to claim 1 wherein the file server is:
- (i) an FTP server;
- (ii) an HTTP server; or
- (iii) a Gopher server.

- 7. A method of executing computer application software on a user's computer which is connected to a communication network including the steps of:
- (a) providing on the user's computer a version of the software which does not include all the files necessary for complete operation of the software;
  - (b) making the missing files available on a file server attached to the network;
  - (c) executing the software on the user's computer;

- (d) monitoring file requests made by the software;
- (e) identifying file requests which relate to files which are not present on the user's computer;
  - (f) downloading the identified files from the file server and storing them in volatile or non-volatile storage media on the user's computer;
  - (g) directing the file requests for the identified files to the downloaded versions of those files; and
- 15 (h) deleting one or more of the downloaded files from the user's computer.
  - 8. A method according to claim 7 wherein the step of deleting one or more of the downloaded files is done:
  - (i) as the files are closed by the software;
- 20 (ii) when execution of the software terminates;
  - (iii) after a pre-determined time or number of days has elapsed; and/or
  - (iii) after the software has been executed a pre-determined number of times.
  - 9. A method according to claim 7 further including the steps of:
- 25 (i) monitoring the number of times that files are requested and/or the particular files requested by the user's computer from the server; and
  - (j) requiring the owner of the user's computer to make payments based on the number of times that files are requested and/or the particular files requested.
- 30 10. A method according to claim 7 wherein the communication network is the Internet.
  - 11. A method according to claim 7 wherein the communication network is a local area network or a private wide area network.

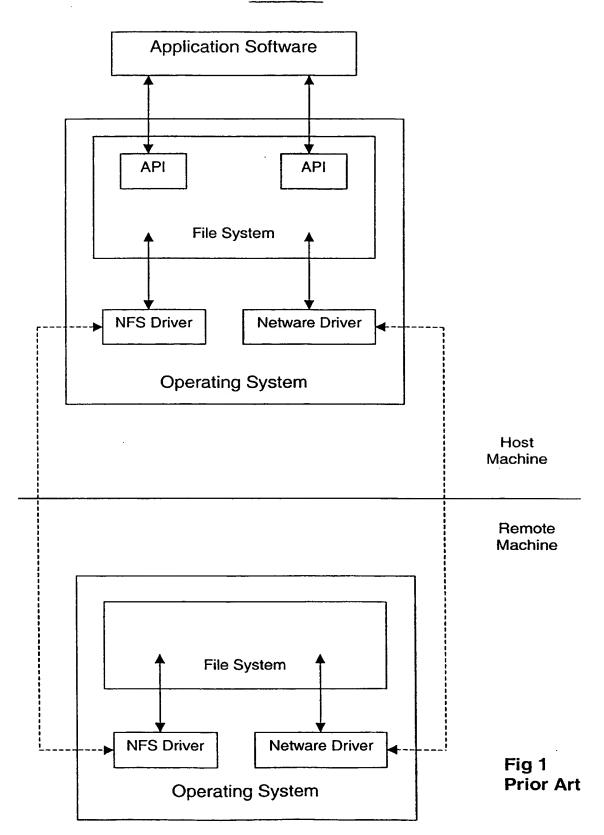
- 12. A method according to claim 7 wherein the file server is:
- (i) an FTP server;
- (ii) an HTTP server; or
- 5 (iii) a Gopher server.
  - 13. A method of automatically upgrading software on a user's computer over a communication network including the steps of:
- (a) making the upgrade software available on a file server attached to the network;
  - (b) ascertaining that the software on the user's computer is an older version than the upgrade software;
  - (c) executing the software on the user's computer and monitoring file requests made by the software;
- (d) identifying file requests which relate to files which have been upgraded in the upgrade software;
  - (e) downloading the identified files from the file server;
  - (f) storing the downloaded files in storage media on the user's computer; and
- (g) directing the file requests for the identified files, and any future file requestsfor those files, to the downloaded versions of those files.
  - 14. A method according to claim 13 wherein the step of ascertaining that the software on the user's computer is an older version than the upgrade software occurs:
- 25 (i) each time the software on the user's computer is executed;
  - (ii) after the software on the user's computer has been executed a predetermined number of times; or
  - (iii) after a predetermined period of time.
- 30 15. A method according to claim 13 wherein, when it is ascertained that the software on the user's computer is an older version than the upgrade software, an upgrade agent is downloaded from the file server to the user's computer and the upgrade agent performs the function of monitoring file requests made by the

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software to identify file requests which relate to files which have been upgraded in the upgrade software.

- 16. A method according to claim 13 wherein the communication network is the5 Internet.
  - 17. A method according to claim 13 wherein the communication network is a local area network or a private wide area network.
- 10 18. A method according to claim 13 wherein the file server is:
  - (i) an FTP server;
  - (ii) an HTTP server; or
  - (iii) a Gopher server.

1/3 DRAWINGS



2/3

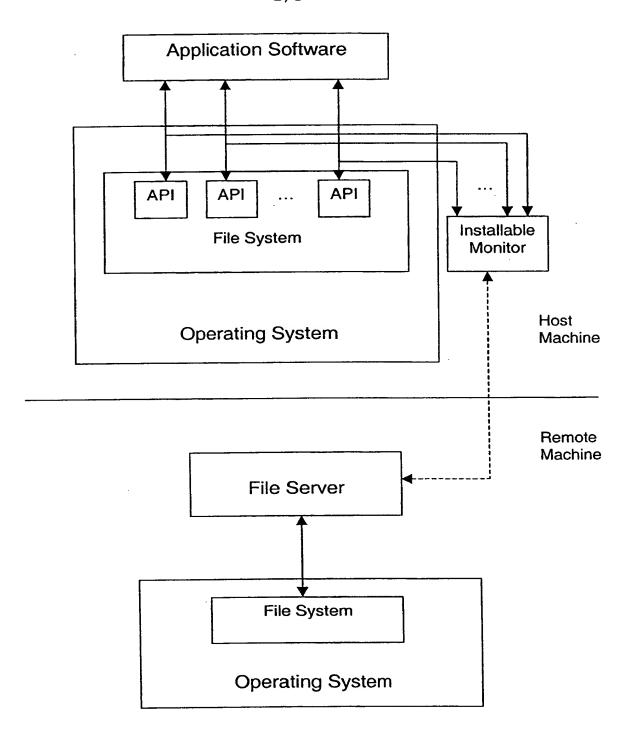


Fig 2

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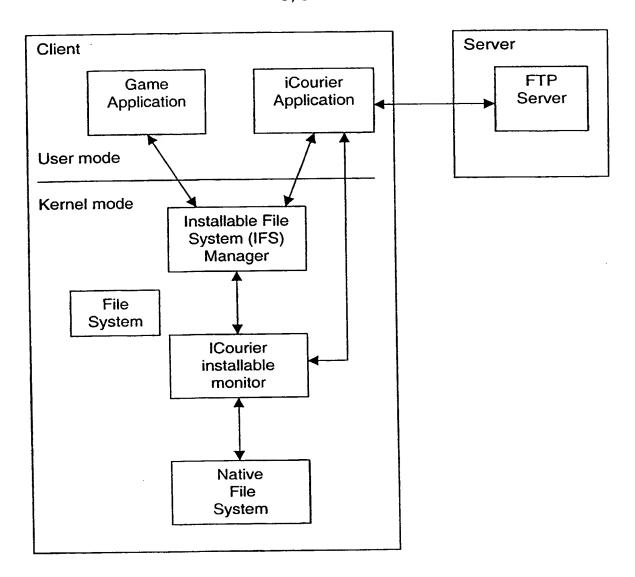


Fig 3

### INTERNATIONAL SEARCH REPORT

International application No. PCT/SG 99/00037

CLASSIFICATION OF SUBJECT MATTER  PC*: G 06 F 13/00, 15/177  B. FIELDS SEARCHED  Minimum documentation searched (classification (IPC) or to both national classification and IPC  B. FIELDS SEARCHED  Minimum documentation searched (classification system followed by classification symbols)  IPC*: G 06 F; H 04 L; H 04 Q  Documentation searched other than minimum documentation to the extent that such documents are included in the fields scarched  Electronic data base consulted during the international search (name of data base and, where prestiteable, search terms used)  WPI, PAJ  C. DOCUMENTS CONSIDERED TO BE RELEVANT  Category Citation of document, with indication, where appropriate, of the relevant passages  A US 5421009 A (HEWLETT-PACKARD) 30 May 1995 (30.05.95)  abstract  A WO 96/24231 A1 (ERICCSON) 8 August 1996 (08.08.96)  totality.  A US 5845077 A1 (MICROSOFT) 1 Docember 1998 (01.12.98)  abstract.  A US 5881236 A (HEWLETT-PACKARD) 9 March 1999 (09.03.99)  abstract.  A US 5881236 A (HEWLETT-PACKARD) 9 March 1999 (09.03.99)  abstract.  A US 5881236 A (HEWLETT-PACKARD) 9 March 1999 (09.03.99)  abstract.  A IJ P 10-269078 A (TOSHIBA K.K.) 9 October 1998 (09.10.98)  1-6  abstract.  A IJ P 10-269078 A (TOSHIBA K.K.) 9 October 1998 (09.10.98)  1-6  2-7 Special categories of cited documents:  A comment reprinciple that on the international search or ordinary data of the international date of international search to considered to involve an inventive step when the document is taken due to remove a special research in the international search report of counted for the international search report 23 August 2000 (23.08.2000)  Name and mailing address of the ISA/AT  Austrian Pattent Office  Kohlmarkt 8-10; A-1014 Vienna  Feethelike No. 1/53424/355  Telephone No. 1/53424/357								
According to International Petoni Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC <sup>2</sup> . G of F, H of L; H of Q Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched WPI, PAJ  C. DOCUMENTS CONSIDERED TO BE RELEVANT Cstegory Citation of document, with indication, where appropriate, of the relevant passages  A US 5421009 A (HEWLETT-PACKARD) 30 May 1995 (30.05.95)  abstract  A WO 96/24231 A1 (ERICCSON) 8 August 1996 (08.08.96)  1-18  totality.  A US 5845077 A1 (MICROSOFT) 1 December 1998 (01.12.98)  abstract.  A US 5881236 A (HEWLETT-PACKARD) 9 March 1999 (09.03.99)  1-6  1-6  1-7  **Special catagories of cloid documents.** A UP 10-269078 A (TOSHIBA K.K.) 9 October 1998 (09.10.98)  1-6  abstract.  A JP 10-269078 A (TOSHIBA K.K.) 9 October 1998 (09.10.98)  1-6  **Concented theiring the general state of the set which is not considered to be of qualified on or after the international state of the set which is not considered to be of qualified on or after the international state of the set which is inside to entitish the publishered and set of question citation or other special reason (see specified)  **Concented technique the general state of the set which is not considered to the other states of the set which is not considered to the other states of the set which is not considered to be of qualified on or after the international state of the set which is not considered to the other which is not considered to the considered to involve the considered to involve the considered to involve the considered to involve the set of the state of the set which is not considered to the considered to involve the considered to involv	CLASSIFICATION OF SUBJECT MATTER							
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Minimum documentation searched classification system followed by classification symbols)  IPC <sup>7</sup> : G 06 F; H 04 L; H 04 Q  Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  Electronic data base consulted during the international search (name of data base and, where practicable, search terms ussel)  WPI, PAJ  C. DOCUMENTS CONSIDERED TO BE RELEVANT  Category Citation of document, with indication, where appropriate, of the relevant passages  A US 5421009 A (HEWLETT-PACKARD) 30 May 1995 (30.05.95)  abstract.  A WO 96/24231 A1 (ERICCSON) 8 August 1996 (08.08.96)  totality.  A US 5845077 A1 (MICROSOFT) 1 December 1998 (01.12.98)  abstract.  A US 5881236 A (HEWLETT-PACKARD) 9 March 1999 (09.03.99)  1-6  abstract.  A US 5881236 A (HEWLETT-PACKARD) 9 March 1999 (09.03.99)  1-6  abstract.  A IP 10-269078 A (TOSHIBA K.K.) 9 October 1998 (09.10.98)  1-6  In the document published prior to the international sting date or priority and and not in candit to the considerate of the priority electronic and specified)  Or document published prior to the international stilling date to inversible step of the priority after claimed  Date of the actual completion of the international stilling date but not other means  23 August 2000 (23.08.2000)  Name and malling adress of the ISA/AT  Austrian Patent Office  Kohlmarkt 8-10; A-1014 Vienna			ional classification and IPC					
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